In the Drawings:

The attached sheet of drawings includes changes to Figure 1. This sheet, which includes Figure 1, replaces the original sheet including Figure 1. In Figure 1, the previously omitted "Prior Art" legend has been added.

REMARKS

Applicants appreciate the thorough examination of the present application that is reflected in the Official Action of March 22, 2007. Applicants also appreciate the Examiner's indication that Claims 1-17 are allowed. Claim 20 has been canceled herein, to eliminate any issues under 35 USC §101, and to advance the present application to allowance. Moreover, a replacement sheet for Figure 1, including the "Prior Art" legend, is being filed concurrently. Finally, Claim 1 has been amended to correct a typographical error.

Accordingly, the sole issue for consideration is the rejection of Claims 18 and 19 under 35 USC §103(a) over U.S. Patent 5,732,113 to Schmidl et al. in view of U.S. Patent Application Publication 2003/0050945 to Chen et al. Applicants respectfully submit that Claims 18 and 19 are patentable over Schmidl et al. in view of Chen et al. for at least the following reasons:

Claim 18 recites:

> 18. A Fast Fourier Transform (FFT) processor for processing an Orthogonal Frequency Division Multiplexing (OFDM) signal having a symbol, the symbol including a first long preamble and first data, the FFT processor comprising:
>
> an input buffer that is configured to temporarily store the first data;
>
> a memory bank that is configured to store the first long preamble; and
>
> an FFT unit that is configured to transform the first long preamble in the memory bank into a second long preamble in a frequency domain and to store the second long preamble back into the memory bank, to transform the first data that is temporarily stored in the input buffer into second data in the frequency domain and to store the second data into the memory bank.

Claim 18 stands rejected under 35 USC §103(a) over Figure 5 of Schmidl et al. combined with Figure 5 of Chen et al. However, Applicants respectfully submit that, even if these references were combined, the recitations of Claim 18 would not be described or suggested.

In particular, as noted above, Claim 18 relates to:

> A Fast Fourier Transform (FFT) processor for processing an Orthogonal Frequency Division Multiplexing (OFDM) signal having a symbol, the symbol including a first long preamble and first data, the FFT processor....

In contrast, as noted in Column 10, lines 10-14 of Schmidl et al.:

> FIG. **5** is a block diagram of an apparatus according to the present invention for estimating symbol timing, carrier frequency offset, and

> sampling rate offset in order to synchronize a receiver to an OFDM signal;....

Accordingly, although the present application and Schmidl et al. relate to OFDM, Figure 5 of Schmidl et al. performs a different purpose than Claim 18.

Figure 5 of Schmidl et al. includes a memory/data storage buffer **122**. However, this memory/data storage buffer **122** is responsive to inputs q_i and p_i. As noted repeatedly in Schmidl et al., p_i and q_i are the complex value samples of the OFDM signal. Accordingly, Schmidl et al. does not describe or suggest:

> ...an input buffer that is configured to temporarily store the first data;
> a memory bank that is configured to store the first long preamble...,

as recited in Claim 18. Moreover, Schmidl et al.'s microprocessor/DSP firmware **124** and DFT/FFT unit **126** do not perform the operations of the claimed FFT unit. In particular, as noted at Schmidl et al. Column 16, lines 40-67:

> In the preferred embodiment, computing means **124** uses samples stored in storage means **122** to compute P(d), preferably using the iterative formula (3). Additionally, computing means **124** uses samples stored in storage means **124** to compute R(d), preferably using the iterative formula (5). Computing means **124** further computes the value of the timing metric M(d) and evaluates it to determine the best timing point, d_{opt}.
>
> In the preferred embodiment, computing means **124** begins its timing acquisition process by first determining if M(d) has risen above a predetermined threshold, i.e. by checking the condition:
>
> $$|P(d)|^2 > (\text{threshold}).(R(d))^2 \qquad (10)$$
>
> Using this test, computing means **124** need not check every sample. In the preferred embodiment, although only one out of every 100 samples is processed, this timing metric is still able to determine when a training symbol has been received, and it gives a rough estimate of the timing point. Operating under this condition, the expected value of M(d) at the best timing point is 0.98 with a standard deviation of 0.031, and at a position outside the first training symbol, the expected value is 0.024 with a standard deviation of 0.024. For each sample that is processed, there are 10 real multiplications and 11 real additions. Counting each multiplication or addition as one operation, computing means **124** is required to process about 2 million operations per second while waiting for the training sequence to arrive.

Again, there is no description or suggestion of:

> ...an FFT unit that is configured to transform the first long preamble in the memory bank into a second long preamble in a frequency domain and to store the second long preamble back into the memory bank, to transform the first data that is temporarily stored in the input buffer into

> second data in the frequency domain and to store the second data into the memory bank,

as recited in Claim 18. Accordingly, although Schmidl et al. and Claim 18 both relate to OFDM processing, many of the recitations of Claim 18 are simply not met.

Moreover, the Official Action concedes at the top of Page 4 that Schmidl et al. is silent about a memory bank, and cites Chen et al. as allegedly supplying this deficiency. However, Chen et al. describes the operation of a memory bank **71** at Paragraph [0040] as follows:

> **[0040]** In operation, FFT/IFFT unit **36** receives input data sample points (DATA IN), e.g., from ADC **33** or mapper **46**. FFT/IFFT unit **36** stores a portion of the input data sample points in RAM **70**, and selectively chooses input data samples from RAM **70** as input for arithmetic unit **66**. Controller **70** [sic] selectively controls addressing of RAM memory banks **71** to drive reading of data sample points from RAM **70**, and corresponding twiddle factors as input for arithmetic unit **66**. Arithmetic unit **66** may further receive input data directly from an observation sample for a received signal. Arithmetic unit **66** applies butterfly operation unit **74** to the four data sample points, and multiplies a portion of the results by corresponding twiddle factors using multipliers **76**. A radix-4 FFT butterfly operation receives four inputs x**0**, x**1**, x**2**, and x**3**, and generates four outputs y**0**, y**1**, y**2**, and y**3** in accordance with the expressions below.

There is no description or suggestion in this passage of:

> ...a memory bank that is configured to store the first long preamble...,

nor is there description or suggestion of:

> ...an FFT unit that is configured to transform the first long preamble in the memory bank into a second long preamble in a frequency domain and to store the second long preamble back into the memory bank, to transform the first data that is temporarily stored in the input buffer into second data in the frequency domain and to store the second data into the memory bank,

as recited in Claim 18.

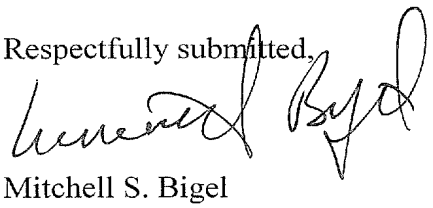
Accordingly, even if combined, the combination of Schmidl et al. and Chen et al. would simply not describe or suggest many of the recitations of Claim 18. Claim 18 is, therefore, patentable over Schmidl et al. in view of Chen et al. for at least these reasons. Claim 19 is patentable at least per the patentability of Claim 18 from which it depends.

In conclusion, Applicants do not claim to have invented OFDM processors or memory banks. However, notwithstanding their common terminology, Applicants have shown that the combination of Schmidl et al. and Chen et al. does not describe or suggest

many of the recitations of Claim 18. Accordingly, Applicants respectfully request withdrawal of the rejections of Claims 18 and 19, and allowance of the present application.

If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (919) 854-1400.

Respectfully submitted,



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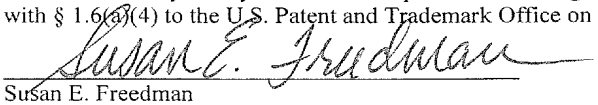

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Date of Signature: May 22, 2007